



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,553	07/30/2003	Hiroki Nakano	JP920020113US1	1552
32074	7590	06/28/2005	EXAMINER	
INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 300-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533			CALEY, MICHAEL H	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,553

Applicant(s)

NAKANO ET AL.



Examiner

Michael H. Caley

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,9,10 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1-6,9,10 and 13-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 04182005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 8, 9, 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Chaudhari et al. (U.S. Patent No. 6,331,381 “Chaudhari”).

Regarding claim 1, Chaudhari discloses an apparatus for forming an alignment layer on a substrate of a liquid crystal display having:

means for generating an ion beam or an atomic beam (Figures 3 and 4 element “linear ion sources”);

masks interposed between the substrate and the generating means, and respectively including an edge in a shape based on the orientation direction at each position of the alignment layer, the shape being defined across an entire width of the alignment layer (Figures 3B and 4B elements “mask” and “substrate”); and

a slit formed by a plurality of edges of the masks (Figures 3 and 4, slits through which substrate is exposed to ion source).

Regarding claim 2, Chaudhari discloses the shape of one of the edges as determined by integrating the orientation direction of liquid crystals in forming an alignment layer using a linear

Art Unit: 2871

edge perpendicular to the moving direction of the substrate along the linear edge (Column 3 lines 59-67; Figures 3 and 4).

Regarding claim 3, Chaudhari discloses one of the edges as provided on the end side of a moving direction of the substrate (Figures 3 and 4) as including a shape based on the distribution of the orientation direction of liquid crystals and the other edge provided on the starting side of the movement direction of the substrate (Figures 3 and 4) as in a linear shape.

Regarding claim 4, Chaudhari discloses the edges provided on the starting and end sides of the moving direction of the substrate as in the same shape (Figures 3 and 4).

Regarding claim 6, Chaudhari discloses the shape of one of the edges as determined by integrating the orientation direction of liquid crystals in forming an alignment layer using a linear edge perpendicular to the moving direction of the substrate along the linear edge (Column 3 lines 59-67; Figures 3 and 4).

Regarding claim 8, Chaudhari discloses the shape of the edge of the mask projected on a substrate provided on the end side of the moving direction of the substrate as including a shape based on the distribution of the orientation direction of liquid crystals (Column 3 lines 59-67; Figures 3 and 4), and the other edge provided on the starting side of the moving direction of the substrate as in a linear shape.

Art Unit: 2871

Regarding claim 9, Chaudhari discloses the edges provided on the starting and end sides of the moving direction of the substrate as in the same shape (Figure 3 and 4).

Regarding claims 13 and 16, Chaudhari discloses a mask between the substrate and the irradiation source as deformed in a plane perpendicular to the substrate having an edge deformed in a plane parallel to the substrate (Figures 3 and 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 10, 14, 15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhari.

Regarding claim 5, Chaudhari fails to explicitly disclose the edges as respectively including a curve shape. Chaudhari, however, teaches that the edges may be configured to have a sine curve shape or Gaussian curve shape (Column 5 lines 3-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the edge disclosed by Chaudhari to have a Gaussian or sine curve shape. One would have been motivated to form the edge accordingly to avoid lack of uniformity associated with a border region between multiple ion guns (Column 4 lines 8-20).

Regarding claim 10, Chaudhari discloses the edges respectively as having a different distance from the substrate at each position (Figures 3 and 4; Figure 4A shows different distances).

Regarding claims 14, 15, 17 and 18, Chaudhari fails to explicitly disclose mask as dynamically deformable and the product-by-process limitations of an external force exerted on the mask for deforming the mask. Chaudhari, however, discloses a mask material that is capable of deformation by an external force, such as to form the shape of the mask (Figure 4 element "mask").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert an external force on the mask disclosed by Chaudhari. One would have been motivated to exert a force on the mask as part of the manufacturing process according to conventional means in the art to benefit from a mask having a particular shape thereby eliminating border problems between ion guns (Column 4 lines 8-62).

The examiner further notes that due to the product-by-process nature of the claim, the reference must only the structure implied by the steps, not the manipulations recited by the steps (MPEP 2113).

Response to Arguments

Applicant's arguments filed 4/18/05 have been fully considered but they are not persuasive.

Regarding the rejection of claim 1 as anticipated by Chaudhari, Applicant argues that Chaudhari fails to disclose a shape that is defined across an entire width of the alignment layer in view of Column 4 lines 45-55. The examiner agrees that the particular embodiment shown in Figures 5A and 5B fails to disclose an edge in a shape being defined across an entire width of the alignment layer. Chaudhari, however, discloses alternative embodiments showing such an edge shape as described above (Figures 3 and 4).

Regarding the rejection of claim 6 as anticipated by Chaudhari, the orientation direction of liquid crystals in forming an alignment layer is inherently and directly resulting from the shape of the edge projected on the substrate. Although Chaudhari does not disclose an explicit step of integrating the orientation directions to determine an edge shape, such process steps do not imply a structure different from that which is defined by Chaudhari (MPEP 2113).

Regarding the rejection of claim 13 as anticipated by Chaudhari, Applicant argues that Chaudhari only discloses a mask having an opening with shaped ends and therefore does not disclose a mask that is “deformed in a plane perpendicular to the substrate”. The examiner, however, disagrees given that the edge and opening occur in a location perpendicular to the substrate. Also given that the limitation “deformed” is a product-by-process limitation and the recited steps do not imply a structure different from that which is disclosed by Chaudhari, the claim is not patentable over the cited art even though the method limitation is not explicitly mentioned in the reference (MPEP 2113).

Art Unit: 2871

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley

June 27, 2005



mhc



DUNG T. NGUYEN
PRIMARY EXAMINER